with the static and dynamic changes in the abnormal lung. Instruments such as a Vitalograph® or a Vitalor® are relatively inexpensive and quite adequate for such purposes. Recently, simple electronic devices with a digital printout have become available, but these usually do not have a recording spirometer.

Detected abnormalities may require more detailed pulmonary evaluation such as studies of diffusion, distribution of ventilation and perfusion, and arterial blood gas analysis for partial pressure of oxygen and of carbon dioxide (pO_2 and pCO_2) and for hydrogen ion concentration (pH). These are not usually routine office procedures.

Early detection of pulmonary disease and differential diagnosis of shortness of breath usually are begun in the physician's office and must include some form of pulmonary function evaluation. Routine checkups, insurance and industrial examinations, and preoperative and preemployment evaluations should include screening of pulmonary function. All persons who smoke should be given periodic evaluation of pulmonary reserve.

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New Beta Adrenergic Drugs in Asthma

RECENTLY, PHARMACOLOGISTS have modified the structure of the beta-1 bronchodilator isoproterenol so that enzymatic deactivation is minimized. These modifications have produced a whole class of new compounds, which not only are longer acting but whose effects upon several organs are vastly different. One of the major distinctions between these drugs—which include metaproterenol, terbutaline and salbutamol, and beta-1 agents—is that they produce less cardiac stimulation, while still retaining the ability to produce bronchodilatation; this type of response is termed beta-2. One of the major side effects of beta-2 drugs is muscle tremor; this manifestation of toxicity may be the limiting factor in many cases in treatment. However, there is evidence suggesting that muscle tremor but not bronchodilator activity tends to disappear with extended treatment (tolerance). In contrast to isoproterenol, which cannot be administered orally, these drugs are potentially available in all treatment usage forms: oral, injectable and inhalable as an aerosol (both liquid and pressurized). In comparison with the standard oral drug, ephedrine, which has multiple adrenergic activities (alpha and beta), beta-2 medications are longer acting and stimulate the heart less. Because of these properties, these beta-2 agents are now the adrenergic drugs of choice.

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Vineyard Sprayer's Lung

PERHAPS APPROPRIATE to California and other agricultural areas, T. G. Villar has reported on acute and chronic lung infiltrates due to Bordeaux mixture, a 1 to 2.5 percent solution of copper sulfate neutralized by hydrated lime, which is used as a pesticide. Other organocupric and organosulfurous preparations apparently can produce similar reactions. These pesticides are used to suppress mildew in vineyards, on farms, in parks, etc. These substances have only been widely used in recent years. Long periods of exposure are required, perhaps accounting for the paucity of reported cases so far.

After long exposure, histiocytic granulomata are produced containing copper, and fibrohyaline scars resulting may coalesce, liquefy and cavitate. Lesions histologically are similar to and may be confused with silicosis, but no doubly refractive particles are seen as in silicosis.

Asymptomatic forms may be clinically and in chest x-ray studies considered initially to be lung cancer. Acute forms with weakness; malaise; weight loss, and exudative, nodular or miliary infiltrates seen on an x-ray film of the chest may be mistaken for tuberculosis. Chronic forms with upper lobe infiltrates, dyspnea and restrictive ventilatory defects noted on pulmonary function testing may resemble silicosis, while others with diffuse lung infiltrates resemble chronic interstitial pulmonary fibrosis.

Some persons improve after cessation of ex-